



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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IM22/1219

EXAMINER

IP, S

ART UNIT

PAPER NUMBER

1742

DATE MAILED:

10
12/19/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

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Office Action Summary

Application No.

Applicant(s)

Examiner

Group Art Unit

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- ☒ Responsive to communication(s) filed on 8/28/00 ; 9/26/00
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1-11, 13-25 is/are pending in the application.
- Of the above claim(s) 12-19 is/are withdrawn from consideration.
- ☒ Claim(s) 16, 20-25 is/are allowed.
- ☒ Claim(s) 1-11, 13-15 is/are rejected.
- ☐ Claim(s) is/are objected to.
- ☐ Claim(s) are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
 - ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been received.
 - ☐ received in Application No. (Series Code/Serial Number) _____
 - ☐ received in this national stage application from the International Bureau (PCT Rule 1.7.2(a)).

*Certified copies not received: _____

Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☐ Interview Summary, PTO-413
- ☐ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Other _____

Office Action Summary

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DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 148 USPQ 459, that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

- A. Determining the scope and contents of the prior art.
- B. Ascertaining the differences between the prior art and the claims at issue.
- C. Resolving the level of ordinary skill in the pertinent art.
- D. Considering objective evidence present in the application indicating obviousness or unobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-6, 8, 9, 14, and 15 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over USP 5527628 to Anderson et al. (Col. 4 lines 15-27, col. 3 lines 18-32, and col. 5 line 59 to col. 6 line 59).
16, 20, 21, 23, 24, 25

5. The Anderson et al reference discloses step of combining a Sn solder with the components of the intermetallic phases such as Cu and Ag to form a mixture (see col. 5, line 59 to col. 6, line 12). The mixture can be formed as composite solder wire, solder sheet, solder ingot, and solder

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powder (col. 5, lines 60-62). The composite solder melt can be chill cast (col. 5, line 67 to col. 6, line 2) or used as melt stock to form solder powder by melt atomization (col. 6, lines 14-15).

Anderson et al do not disclose the claimed cooling rate. But, Anderson et al disclose the solder powder is produced by conventional atomization techniques (col. 6, lines 14-50) which is known in the art of cited reference that the cooling rate is at least 100 °C/sec. Thus, the examiner takes the official notice that conventional atomization methods as disclosed by Anderson et al would have the cooling rate at least 100 °C/sec. Thus, the claimed invention is taught by the Anderson et al reference.

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6. Claim 7 is rejected under 35 U.S.C. § 103 as being unpatentable over USP 5527628 to Anderson et al. as applied to claims above, and further in view of Gibson et al.

7. The claimed subject matter as is disclosed and rejected above by the cited reference(s) except for the volume of the intermetallic phase. However, Gibson et al. In the abstract teach 20 volume percent intermetallic phase would improve fatigue resistance. Therefore, it would have been obvious to one having ordinary skill in the art of cited references at the time the invention was made to employ the teachings as taught by Gibson et al. in order to improve the solder fatigue resistance. In re LaVerne, et al., 108 USPQ 335 and In re Aller, et al., 105 USPQ 233.

8. Claims 10-11 and 13 are rejected under 35 U.S.C. § 103 as being unpatentable over USP 5527628 to Anderson et al. as applied to claims above, and further in view of USP 5520752 to Lucey, Jr. et al.

9. The claimed subject matter as is disclosed and rejected above by the cited reference(s)

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except for the different intermetallic phases and cooling methods. However, Lucey, Jr, et al. In col. 3 line 64 to col. 4 line 5 disclose the other intermetallic phases in the eutectic solder alloys and their cooling methods are conventional in the same field of endeavor. Therefore, it is within ambit of ordinary skill artisan to use conventional methods to produce conventional solders. It has been held that combining known ingredient having known functions, to provide a composition having the additive effect of each of the known functions is within realm of performance of skilled artisan and is not a patentable subject matter. In re Castner, 186 USPQ 213 (217). The use of conventional materials to perform their known functions in a conventional process is obvious. In re Raner, 134 USPQ 343 (CCPA 1962).

Allowable Subject Matter

10. Claim 16 and 20-25 are allowed.

Response to Arguments

11. Applicant's arguments filed August 28, 2000 have been fully considered but they are not persuasive.

12. Applicants' argument as set forth in paragraph bridging pages 3 and 4 of remarks filed August 28, 2000 is noted. But with respect to instant claim 1 that step a) of claim requires only components of the intermetallic phase not intermetallic compound as argue. The intermetallic components such as Ag, Cu, and Sn are disclosed by Anderson (see col. 3, lines 18-27).

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13. Applicants' argument as set forth in page 4 of instant remarks, second full paragraph, is noted. But claim 1 does not require the intermetallic components are different from solder components.

14. Applicants' argument as set forth in paragraph bridging pages 4 and 5 is noted. But examiner reiterates the reason as set forth in item 12 above. Further, it is known in the art of cited reference that spray atomization has cooling rate greater than 100°C/s.

15. Applicants' argument with respect to Gibson et al is noted. However, the Gibson et al reference is merely cited to show the teaching and advantage of 20 volume percent intermetallic phase.

Conclusion

The above rejection relies on the reference(s) for all the teachings expressed in the text(s) of the references and/or one of ordinary skill in the metallurgical art would have reasonably understood or implied from the text(s) of the reference(s). To emphasize certain aspect(s) of the prior art, only a specific portion(s) of the text(s) has been pointed out. Each reference as a whole should be reviewed in responding to the rejection, since other sections of the same reference and/or various combination of the cited references may be relied on in future rejection(s) in view of amendment(s).

All recited limitations in the instant claims have been met by the rejections as set forth above.

Applicant is reminded that when amendment and/or revision is required, applicant should therefore specifically point out the support for any amendments made to the disclosure. See MPEP § 2163.06 (a) and 37 C.F.R. § 1.119.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to S. Ip whose telephone number is (703) 308-2542. The examiner can normally be reached Monday to Friday from 6:30 A.M. to 2:00 P.M.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Roy King, can be reached on (703)-308-1146.

The facsimile phone number for "After Final Official Papers" is (703) 305-3599, "All Other Official Papers" is (703) 305-7718, and "Unofficial Papers" is (703) 305-7719. When filing a FAX in Technology Center 1700, please indicate in the Header (upper right) "Official" for papers that are to be entered into the file, and "Unofficial" for draft documents and other communication with the PTO that are not for entry into the file of the application. This will expedite processing of your papers.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.



SIKYIN IP
PRIMARY EXAMINER
ART UNIT 1742

S. Ip
December 18, 2000